

Five new species of *Anastraphia* D. DON (Gochnatioideae, Asteraceae) from Cuba

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Abstract

As part of the taxonomic revision of the genus *Anastraphia* D. DON (Asteraceae) in Cuba, five new species are described: *Anastraphia herrerae* I. VENTOSA, *A. cristalensis* I. VENTOSA & P. HERRERA, *A. crebribracteata* I. VENTOSA & P. HERRERA, *A. oviedoae* I. VENTOSA & P. HERRERA and *A. geigeliae* I. VENTOSA & P. HERRERA. All five species are strictly endemic to the eastern region of Cuba.

Introduction

Taxonomic studies on the families of the Cuban flora are currently being carried out along with other efforts to enhance knowledge of Cuban biodiversity. One particular objective of these studies is the new "*Flora de la República de Cuba*".

During the taxonomic revision of the Asteraceae, the genus *Anastraphia* D. DON was resurrected, reuniting the species formerly in the section *Anastraphioides* R.N. JERVIS ex S. E. FREIRE, KATINAS & G. SANCHO of the genus *Gochnatia* KUNTH (VENTOSA & HERRERA 2011). Concurrently, detailed studies of herbarium material in the collections of the Jardín Botánico Nacional of Cuba (HAJB) and the Museum of the University of Jena (JE) identified five new taxa of *Anastraphia*. In the present work we describe and discuss these taxa new to science. Four of them were first collected between 1960 and 1985 during the collaborative German–Cuban botanical expeditions that provided the basis for the *Flora de la República de Cuba*. For that reason the materials were deposited in HAJB and JE. These collections were made after ALAIN'S (1960, 1964) taxonomic treatment for the first *Flora de Cuba*. In their respective treatments, CABRERA

(1971) and FREIRE et al. (2002) followed ALAIN (1964), having no access to the new materials in HAJB and JE and therefore being unaware of these new species. The fifth new species resulted from a close study of *Anastraphia recurva* BRITTON, the extreme variability of which had been discussed by JERVIS (1954). All five new species of *Anastraphia* inhabit the phytogeographic subprovince Oriento-Cubanicum (BORHIDI 1991). Of the Cuban species of *Anastraphia*, 60% occur in this subprovince, which has the highest species richness in this genus of all Cuban biogeographical subprovinces.

Materials and Methods

Herbarium materials of the Jardín Botánico Nacional (HAJB) and the Museum of the University of Jena (JE) were examined. Standard morphological measurements were made on all specimens, whenever possible on five leaves and three capitula per specimen. General morphology was characterized using the terminology of FONT QUER (1965). Terminology specific to the family Asteraceae followed the criteria and standards of BREMER (1994), KUBITZKI (2007), and KATINAS et al. (2008). BORHIDI'S (1991) classification was used to characterize leaves by leaf surface area, while qualitative characterization of leaf surface, margins and venation followed the classification of HICKEY (1988).

Pollen studies were carried out in the Laboratory of Palynology of the Swedish Museum of Natural History, Stockholm. Classification of the exine layer and description of general characteristics of pollen grains followed the criteria of TELLERÍA (2008) and the terminology of PUNT et al. (1994).

Results

Analysis of the herbarium materials led to the following descriptions of the new taxa.

1. *Anastraphia herrerae* I. VENTOSA, sp. nov.

Type: [specimen] CUBA, Holguín, "Moa, Mina Yarey, cabezadas del río Jiguaní, 400m snm", 15.V.1983, BISSE, J., BEURTON, C., DIETRICH, H., GUTIÉRREZ, J., LEPPER, L., KÖHLER E., ARIAS, I., RANKIN, R. HFC-49567 (holotype: HAJB!, isotypes: HAJB!, B!). (Fig. 1).

Frutex 2–5 m altus, ramosus. Folia alterna, 43–102 mm longa, 17–35 mm lata, valde coriacea, obovata aut oblonga vel elliptica; ad apicem obtusa vel acuta; ad basin rotundata aut acuta; ad marginem recurvata, 4–13 dentibus spinosis binatim armata; supra pubescentia, subtus dense tomentosa. Capitula duo, terminalia,

vel capitulum terminale solitarium, discoideum, multiflorum; involucreum late campaniforme, basi obtusa; phyllaria in 9–10 seriebus disposita, linearia, valde tomentosa et coriacea. Flores isomorphi 20–21 mm longi. Corolla tubularis, profunde quinquelobata; lobis erectis, apex lobulorum sine trichomatibus necque papillis. Antherae 5–7 mm longae; appendix apicalis valde apiculata, cauda 2 mm longa, laevis. Stylus exsertus, glaber, 26–29 mm longus. Cypsela cylindrica vel linearis 4–6 mm longa. Pappus 16–20 mm longus, uniserialis, omnibus setis discretis consimilibus.

Shrubs 2–5 m in height, branching almost dichotomously without brachyblasts. Branches pubescent when young and nearly glabrous when adult, bark grooved. Leaves distributed the length of the branches; petiole subcylindrical without channel, 3–8 mm in length; leaf 42–102 mm long by 17–35 mm wide, microphyllous, strongly coriaceous, obovate or oblong to elliptic with obtuse or acute apex and the base rounded or acute, margin recurved, spinose-dentate with 4–13 pairs of teeth, irregular, simple or compound, spine smaller than the teeth, slightly curved in the apex, venation semicraspedodromous with secondary veins abruptly curved; upper surface pubescent and with prominent veins, lower surface strongly tomentose with very prominent veins. Capitula terminal, solitary or paired, 36–41 mm long; involucre broadly campanulate with obtuse base, 29–33 mm high by 7–12 mm wide at the base and 39–50 mm wide at the apex; involucre bracts in 9–10 series, linear and coriaceous with the external surface strongly tomentose, internal bracts 23–29 mm long, medial bracts 15–19 mm long, and external bracts 6–10 mm long. Florets more than 50 per capitulum, 20–21 mm long. Corolla tubular, deeply five-lobed, lobes 12–13 mm long, erect, apex of the corolla lobes without hairs or papillae. Stamens 5, isomorphic, exserted; filaments fused into a tube from the base to the throat of the corolla; anthers 5–7 mm long, with apical appendage strongly acuminate and smooth tails 2 mm long. Pollen 66–74 μm in polar diameter by 51–56 μm equatorial diameter, large, prolate, tricolporate, exine type *Wunderlichia*, surface of the exine microechinate. Style exserted, glabrous, 26–29 mm long. Cypsela cylindrical or straight, 4–6 mm long with abundant biseriate glandular hairs with vesicle and biseriate simple (not glandular) hairs. Pappus 16–20 mm long, uniseriate, with all bristles of equal length and thickness, free at the base.

Phenology: Flowering was recorded in April and May.

Distribution and habitat: *Anastraphia herrerae* is distributed along the banks and at the headwaters of the Río Jiguani, Moa region, Holguín province.

Etymology: This species is named for Dr. PEDRO PABLO HERRERA OLIVER, tireless student of the Cuban flora and especially the composites.

Additional material examined: CUBA: Prov. Holguín: Moa, orillas del río

Jiguaní cerca de Mina Yarey, 1972, BISSE, J. & BERAZAÍN, R., HFC-22469 (HAJB, JE); Prov. Holguín: Moa, Cayo Probado, orillas de las cabezadas del río Jiguaní, 1972, BISSE, J. & BERAZAÍN, R., HFC-22827 (HAJB, JE).

2. *Anaethropia cristalensis* I. VENTOSA & P. HERRERA, sp. nov.

Type: [specimen] CUBA, Santiago de Cuba, Sierra del Cristal, región superior del macizo central, falda sur, 1000–1250 msm, 22.II.1976, BISSE, J., DÍAZ DUMAS, M. A., GONZÁLEZ GEIGEL, L., GUTIÉRREZ, J., & MANITZ, H., HFC-30503 (holotype: HAJB!, isotypes: HAJB!, JE!). (Fig. 2).

Frutex 2–5 m altus, pauciramosus. Folia alterna, petiolus crassus valde tomentosus; foliorum lamina 30–40 mm longa, 15–22 mm lata, elliptica vel ovata, ad apicem obtusa vel rotundata, ad basin cordiformia vel rotundata, valde coriacea, integerrima, plana; supra subglabra, subtus valde tomentosa. Capitulum terminale solitarium, discoideum, multiflorum; involucrem late campaniforme, basi rotundata; phyllaria in 8–9 seriebus disposita, coriacea, valde tomentosa. Flores isomorphi 18–25 mm longi. Corolla tubularis; lobuli tubum circa aequantes, parum recurvati, apex lobulorum trichomatibus glandulosis obsitus, sine papillis. Antherae 12–15 mm longae; appendix apicalis valde apiculata, cauda 4–6 mm longa, breviter laciniata. Stylus exsertus, glaber, 18–20 mm longus. Cypsela cylindrica vel linearis 4–5 mm longa. Pappus 19–21 mm longus, uniserialis, omnibus setis discretis consimilibus.

Shrubs 2–5 m in height, with few branches and without brachyblasts. Branches terete, albo-pubescent when young and with grooved bark when mature. Leaves distributed the length of the branches; petiole subcylindrical without channel, stout, 5–7 mm long by 2–4 mm wide, strongly tomentose over the upper surface; leaves microphyllous, 30–40 mm long by 15–22 mm wide, strongly coriaceous, elliptic or ovate with the apex obtuse or rounded and the base cordate or rounded, margins entire and flat; venation brochidodromous with secondary veins abruptly curved, upper surface subglabrous with no prominent veins, lower surface strongly albotomentose with very prominent veins. Capitulum terminal, solitary, up to 31 mm long; involucre widely campanulate with the base rounded, 20–30 mm high by 17–18 mm wide at the base and 25–35 mm wide at the apex, involucre bracts in 8–9 series, coriaceous, strongly tomentose, internal and medial involucre bracts linear-lanceolate, respectively 18 mm and 12 mm long, external involucre bracts 6 mm long and ovate. Florets 18–25 mm long. Corolla five-lobed; lobes 11 mm long, approximately the same length as the corolla tube, slightly recurved, apices of the corolla lobes with biseriate glandular hairs and without papillae. Stamens 5, isomorphic, exserted; filaments fused to the corolla tube from the base to the throat of the corolla; anthers 12–15 mm long, with apical appendage strongly acuminate and anther tail 4–6 mm long, shortly laciniate. Pollen 70–76 μm in

polar diameter by 47–55 μm in equatorial diameter, large, prolate, tricolporate, exine type Wunderlichia, surface of the exine microechinate. Style exerted, glabrous, 18–20 mm long. Cypsela terete or linear, 4–5 mm long, with abundant biseriate glandular hairs with vesicle and simple (not glandular) biseriate hairs. Pappus 19–21 mm long, uniseriate, with all bristles of equal length and thickness, free at the base.

Phenology: Flowering was recorded in February.

Distribution and habitat: *Anaesthaphia cristalensis* has been collected only above 1000 m elevation on Pico Cristal in the Sierra Cristal. The vegetation of this zone is subspiny xeromorphic scrub growing on serpentine soils, whose edaphic conditions support plants with characteristics normally associated with much more arid climates.

Etymology: The specific name derives from the geographic home of the new taxon, viz. Pico Cristal in the Sierra Cristal of eastern Cuba.

Additional materials examined: At present the species is known solely from the type specimens deposited in HAJB and JE.

3. *Anaesthaphia oviedoae* I. VENTOSA & P. HERRERA, sp. nov.

Type: [specimen] CUBA: Guantánamo, San Antonio, zona por encima de la Mina de Yeso de Baitiquirí, 13.V.1980, ÁLVAREZ DE ZAYAS, A., BISSE, J., GUTIÉRREZ, J., MEYER, F.K., HFC-43186 (holotype: HAJB!, isotypes: HAJB!, JE!). (Fig. 3).

Frutex ca. 2 m altus. Folia alterna, 9–22 mm longa, 5–15 mm lata, elliptica vel oblonga; ad apicem obtusa vel rotundata aut truncata, ad basin acuta aut rotundata, coriacea, ad marginem 1–5 dentibus spinosis binatim armata, dentes spinosi acuminati, supra glabra, subtus valde tomentosa. Capitulum terminale solitarium, discoideum, flores 10–12 in quoque capitulo; involucreum late campaniforme, basi acutum; phyllaria in 4–6 seriebus disposita, chartacea, dorsaliter pubescentia. Flores isomorphi 6–11 mm longi; corolla tubularis, profunde quinquelobata, lobi 5–9 mm longi leviter recurvati vel stricti, apex lobulorum trichomatibus glandulosis obsitus, sine papillis. Antherae 5–7 mm longae; appendix apicalis valde apiculata, cauda circa 2 mm longa, breviter laciniata. Stylus exertus, glaber, 6–10 mm longus. Cypsela cylindrica 3–4 mm longa. Pappus 9–10 mm longus, uniserialis, omnibus setis discretis consimilibus.

Shrubs up to 2 m in height, without brachyblasts. Young branches albo-pubescent, mature branches with grooved bark. Leaves distributed the length of the branches; petiole sub-cylindrical without channel, 2–6 mm long; leaves 9–22 mm long by 5–15 mm wide, nanophyllous, coriaceous, elliptic or oblong, apex obtuse, rounded or truncated, base acute or rounded, toothed margins acuminate, with 1 to 5 pairs

of teeth, regular, simple or compound, spines of same length as teeth; venation semicraspedodromous or mixed craspedodromous with secondary veins uniformly curved, upper surface with inconspicuous veins, glabrous; lower surface with prominent veins, strongly albo-tomentose. Capitulum terminal, solitary, 12–17 mm long with 10–12 flowers per capitulum; involucre narrowly campanulate with pointed base, 5–8 mm high by 2–3 mm wide at the base and 6–8 mm wide at the apex, involucre bracts in 4–6 series, chartaceous and dorsally pubescent, internal involucre bracts linear and 7–8 mm long, medial and external involucre bracts lanceolate and respectively 4–5 mm and 2–3 mm long. Florets 6–11 mm long. Corolla tubular, deeply five-lobed, lobes 5–9 mm long and straight or slightly curved, apex of corolla lobes with biseriate glandular hairs and without papillae. Stamens 5, isomorphic, exserted; filaments fused to the corolla tube from base to throat of the corolla, anthers 5–7 mm long, apical appendage strongly acuminate and tails around 2 mm in length, shortly laciniate. Pollen grains 48–54 μm polar diameter by 38–44 μm equatorial diameter, subprolate, tricolporate, exine of type Wunderlichia, exine surface microechinate. Style exserted and glabrous, 6–10 mm long. Cypsela cylindrical, 3–4 mm long, with abundant biseriate glandular hairs with vesicle and simple biseriate (not glandular) hairs. Pappus 9–10 mm long, uniseriate, with all bristles of equal length and thickness, free at the base.

Phenology: Flowering and fruiting were recorded from February to May.

Distribution and habitat: *Anaethropia oviedoae* inhabits xeromorphic coastal and subcoastal scrub in southeastern Cuba. The species has also been reported in the Monte Cristo region, a limestone relict in a primarily serpentine region of eastern Cuba. The geographic distribution includes the provinces of Camagüey, Las Tunas and Guantánamo, and the microhabitats are fully exposed to sunlight.

Etymology: This species is dedicated to M.Sc. RAMONA OVIEDO PRIETO, Head curator of the herbarium of the Academia de Ciencias in the Instituto de Ecología y Sistemática (HAC), who has dedicated her career to the study and conservation of the Cuban flora and the preservation of Cuba's botanical collections.

Additional materials examined: CUBA: Camagüey, Nuevitás. Península Pastelillo, Loma de Punta Gorda, 0–15 m snm, 1984, BISSE, J. & al., HFC-54112 (HAJB); Las Tunas, El Cupey, La Yaya, Puerto Padre, 1930, CURBELO, M. 524 [HROIG-5221; LS-14457]; Las Tunas, Playa pesquero a Playa Blanca, DEL RISCO, E. & CHIAPPY, C. SV-33478 (HAC); Guantánamo, Jamaica, subida al altiplano de Monte Cristo (Monte Cristi) por el camino del Diamante, 400m snm, BISSE, J. & al., HFC-39168 (HAJB); Guantánamo, subida por la falda sur de la meseta al norte de Baitiquirí, de la Mina del Yeso hacia arriba, monte seco, BISSE, J. & KÖHLER, E., HFC-7853 (HAJB, JE).

4. *Anaethaphia crebribracteata* I. VENTOSA & P. HERRERA, sp. nov.

Type: [specimen] CUBA, Guantánamo, Palenque, Cuchillas de Toa, Cayo Fortuna, pinares y charrascos en el trillo de Riíto a Piloto Arriba, 5.IV.1972, Bisse, J. & BERAZÁIN, R., HFC-22259 (holotype: HAJB!, isotype: HAJB!, JE!). (Fig. 4).

Frutex ca. 2 m altus, ramosus. Folia alterna, 13–33 mm longa, 7–14 mm lata, obovata aut oblonga, ad apicem rotundata vel retusa, ad basin asymmetrica et acuta vel cuneata aut rotundata, coriacea, integerrima, supra glabra, subtus valde tomentosa. Capitula terminalia vel lateral, 1–3 in parvis pseudocorymbis aggregata, subsessilia; involucrem cylindricum-turbinatum, basi valde attenuatum; phyllaria in 5–9 seriebus disposita, chartacea, dorsaliter pubescentia. Flores 7 in quoque capitulo, 6–9 mm longi, corolla quinquelobata, lobi tubum circa aequantes, 3–4 mm longi, apex lobulorum leviter recurvati, trichomatibus glandulosis et papillis obsitis. Antherae 4–5 mm longae, appendix apicalis valde apiculata, cauda 1–2 mm longa, breviter laciniata. Stylus exsertus, glaber, 8–10 mm longus. Cypsela cylindrica 2–4 mm longa. Pappus 5–8 mm longus, uniserialis, omnibus setis discretis consimilibus.

Shrubs to 2 m in height, branched and without brachyblasts. Young branches albobescent, mature branches with grooved bark. Leaves distributed the length of the branches; petiole sub-cylindrical without channel, 2–4 mm long, leaves 13–33 mm long by 7–14 mm wide, nanophyllous, coriaceous, obovate or oblong, apex rounded or retuse, base acute, cuneate or rounded, asymmetrical, margins entire; venation brochidodromous with secondary veins sharply curved, upper surface glabrous with not prominent veins, lower surface strongly tomentose with prominent veins. Capitula terminal or lateral, grouped in small pseudocorymbs of up to three capitula, sessile, 13–15 mm long with 7 flowers per capitulum; involucre 10–12 mm high by 1–2 mm wide at the base and 5–7 mm wide at the apex, turbinate with the base strongly attenuated, involucral bracts in 5–9 series, dorsally tomentose and chartaceous, internal involucral bracts lanceolate and 6–8 mm long, medial and external involucral bracts ovate, lanceolate, respectively 4–6 mm and 2–4 mm long. Florets 6–9 mm long. Corolla tubular, five-lobed, lobes same length as tube, 3–4 mm long and slightly curved at the apex, with glandular hairs and papillae. Stamens 5, isomorphic, exserted; filaments fused to the corolla tube from base to throat; anthers 4–5 mm long, with apical appendage strongly acuminate and tails 1–2 mm long, shortly laciniate. Pollen grains 51–56 μm in polar diameter by 37–43 μm equatorial diameter, prolate, tricolporate, exine type Wunderlichia, exine surface microechinate. Style exserted, glabrous, shortly bilobed, acuminate in the apex and style branches rounded, 8–10 mm long. Cypsela cylindrical, 2–4 mm long, with abundant biseriate glandular hairs and simple (not glandular) biseriate hairs. Pappus 5–8 mm long, uniseriate with all bristles of equal length and thickness, free at the base.

Phenology: Flowering and fruiting were recorded in April and May.

Distribution and habitat: *Anaesthaphia crebribracteata* inhabits xeromorphic scrub on serpentine soils and pine forest growing on ferrallitic soils also derived from serpentine, in Holguín and Guantánamo provinces in eastern Cuba.

Etymology: The specific epithet refers to the imbricate position of the bracts of the involucre (phyllaries).

Additional materials examined: CUBA: Holguín, Moa, falda sur de la Sierra de Moa, subida por el camino a la Mina Yarey, 1972, BISSE, J. & BERAZAÍN, R. HFC-22048; Holguín, Moa, orillas del río Jiguaní cerca de Mina Yarey, 1972, BISSE, J. & BERAZAÍN, R. HFC-22523; Guantánamo, Cuchillas del Toa, Sierra de Maguey, pluvisilva y charrascales 700m snm, 1972, BISSE, J. & al. 22421 (HAJB, JE).

5. *Anaesthaphia geigeliae* I. VENTOSA & P. HERRERA, sp. nov.

Type: [specimen] CUBA, Holguín, Oriente: Meseta unos 400 m de altitud, entre los ríos Cabañas y Moa, IV.1943, MARIE VICTORIN HNO., CLEMENTE HNO. & ALAIN HNO. LS-21693 (holotype: HAC!, isotype: HAC!). (Fig. 5).

Frutex 2–5 m altus, ramosus. Folia alterna, 10–40 mm longa, 7–15 mm lata, obovata aut elliptica, apice obtusa vel rotundata, basi acuta aut rotundata, asymmetrica, coriacea, supra glabra, subtus valde tomentosa, ad marginem 1–13 dentibus spinosis binatim armata; dentes spinosi acuminati. Capitulum terminale solitarium vel capitula 2–4 in glomerulis aggregata, sessilia, multiflora; involucrum late campaniforme, basi rotundatum; phyllaria in 6–8 seriebus disposita, dorsaliter tomentosa. Flores 7–11 mm longi, corolla quinquelobata, lobi tubum aequantes, 3–6 mm longi, leviter recurvati, apex lobulorum trichomatibus glandulosis biseriatis et papillis obsitus. Antherae 4–7 mm longae, appendix apicalis valde apiculata, cauda 1–3 mm longa, laevis. Stylus exsertus, glaber, 8–14 mm longus. Pappus 6–9 mm longus, biserialis, omnibus setis discretis consimilibus.

Shrubs 2–5 m in height, branched without brachyblasts, branches upright. Young branches albo-pubescent, mature branches grooved. Leaves distributed the length of the branches; petiole terete, 1–6 mm long; leaves 10–40 mm long by 7–15 mm wide, nanophyllous, coriaceous, obovate or elliptic, apex obtuse or rounded, bases acute or rounded, asymmetrical, acuminate toothed margins with 1 to 13 pairs of teeth, regular, simple or compound, spine of the same length as teeth; venation semicraspedodromous with abruptly curved secondary veins, upper surface glabrous, lower surface strongly tomentose. Capitula solitary or two to four in glomerule, 12–20 mm in length, multiflorous; involucre widely campanulate with rounded base, 9–14 mm high by 5–10 mm broad at the base and 7–23 mm broad at the apex, involucral bracts in 6–8 series, dorsally tomentose and chartaceous, internal bracts linear 8–13 mm long, medial and external bracts linear-lanceolate,

respectively 6–9 mm and 2–6 mm high. Florets 7–11 mm long. Corolla tubular, five-lobed; lobes 3–6 mm long, of same length as the corolla tube, slightly recurved, apex of the corolla lobes with glandular biseriate hairs and papillae. Stamens 5, isomorphic, exserted. Filaments fused to the tube from the base to the throat of the corolla. Anthers 4–7 mm long, with apical appendage strongly acuminate and tails 1–3 mm, smooth. Pollen grains 47–53 μm polar diameter by 36–43 μm equatorial diameter, subprolate, tricolporate, exine *Wunderlichia* type, exine surface microechinate. Style 8–14 mm, exserted, glabrous. Cypselas cylindrical or reniform, 2–5 mm long, with abundant biseriate glandular hairs with vesicle and simple biseriate (not glandular) hairs. Pappus 6–9 mm long, biseriate, with all bristles of equal length and thickness, free at the base.

Phenology: Flowering was recorded from December to May, fruiting in June and July.

Distribution and habitat: *Anastraphia geigeliae* inhabits xeromorphic, subspiny matorral on serpentine soils as well as pine forests growing on serpentine-derived ferrallitic soils, where *A. crebribracteata* is also found. *Anastraphia geigeliae* is the endemic species of *Anastraphia* that appears most frequently in the serpentine soils of eastern Cuba, specifically in Holguín and Guantánamo provinces.

Etymology: The species name honors Prof. LUTGARDA GONZÁLEZ GÉIGEL, who dedicated her life to the study of the Cuban flora and the training of generations of Cuban botanists.

Additional materials examined: Cuba: Holguín, Pinares de Moa, 1945, ACUÑA J. SV-12782, SV-12784 (HAC); Holguín, Moa, Pinares, camino Gran Tierra, 1945, ACUÑA J. SV-12785, SV-12786 (HAC); Holguín, Moa, Playa Vaca, 1945, ACUÑA J. SV-12787, SV-12788 (HAC); Holguín, Charrascos, Sierra de Moa, aprox. 800 m snm., 1953, ALAIN HNO. 3421 (HAC); Guantánamo, Toa, Charrasco, Peña prieta, Magdalena, aprox. 700 m snm, 1953, ALAIN HNO. 3487 (HAC); Holguín, Charrascales, cerca de la cumbre cristal, 1956, ALAIN HNO. & al. 5693 (HAC); Holguín, sobre la cresta de la Sierra del Cristal, 1955, ALAIN HNO. & LÓPEZ FIGUEIRAS M. AI- 4815 (HAC); Guantánamo, Charrascos, Sierra Azul, Quibiján, Baracoa, alt. aprox. 450-500m, 1960, ALAIN HNO. & LÓPEZ FIGUEIRAS M. AI-7319 (HAC); Holguín, Mayarí arriba, Sierra de Cristal región superior del macizo central 1000-1235 m, 1976, ARECES A. & al. HFC-30506 [SV-30713, 30714] (HAC, HAJB); Guantánamo, Pinalito al sur de la reserva de Cupeyal, 1970, BORHIDI A. & al. 88/ 21 [SV-35520] (HAC, HAJB); Guantánamo, embocadura del Río Yamanigüey, Charrascal serpentinoso, 1970, BORHIDI A. & al. SV- 27916 (HAC); Holguín, Moa, Playa La Vaca, 1944, CLEMENTE HNO. NSC- 3656 (HAC); Holguín, Cananova, 1949, CLEMENTE HNO., ALAIN HNO. & CHRYSOGONÉ HNO. AI-967 [NSC- 6871] (HAC); Holguín, Playa La Vaca, Moa, 1946, CLEMENTE HNO. &

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Discussion

The species *Anaesthaphia cristalensis* is described based on a single specimen collected on the peak of the Sierra del Cristal, between 1000 and 1250 m elevation. The new taxon can be defined despite the limited material, given its morphological uniqueness: elliptical leaves with flat, entire margins and cordate bases. Morphologically the new species resembles *A. crassifolia* in that both present leaves > 30 mm long with entire margins, campanulate capitula and flowers with lobes the same length as the corolla tube. The two species differ notably, though, in the shape of leaf bases and apices. Furthermore, *A. crassifolia* and *A. cristalensis* differ in characteristics of the involucre bracts, in the presence of hairs and papillae in the flower, and in characteristics of the cypsel. Efforts to collect additional material of *Anaesthaphia cristalensis* have not been successful to date, due to the difficulty of access to the central part of the Sierra de Cristal and the difficulty of locating an apparently scarce shrub amidst the complex vegetation of the area.

Anaesthaphia herrerae also resembles *A. crassifolia* in leaf dimensions, capitulum, texture, and floral characteristics. The two species differ considerably, however, in leaf margins: flat and entire in *A. crassifolia*, recurved and spinose-dentate in *A. herrerae*. This species inhabits the region of the headwaters of the Río Jiguani in Guantánamo, where according to the herbarium label it grows in serpentine-derived soils similar to those where *A. crassifolia* is found. *Anaesthaphia herrerae* also resembles *A. ilicifolia* D. DON except with respect to the teeth of leaf margins:

sharply acuminate with prominent spines in two series in *A. ilicifolia*, spines smaller than teeth in *A. herrerae*. These two species also differ in the characteristics of the involucre bracts, which are linear and strongly tomentose in *A. herrerae* but in *A. ilicifolia* ovate-lanceolate and pubescent. The two taxa also differ in distribution and rock types. *Anastraphia ilicifolia* grows in calcareous rocks of western and central Cuba whereas *A. herrerae* is found exclusively in serpentine rock of eastern Cuba. Several specimens exist of the latter species but like *A. cristalensis*, *A. herrerae* has not been encountered recently.

Anastraphia crebribracteata is another case of a species clearly distinct from its congeners, due to the sessile capitulum with involucre with attenuated base and numerous series of imbricate bracts. Furthermore, it is the only Cuban species whose capitula are grouped in small pseudocorymbs. This species morphologically resembles *A. obtusifolia* in terms of the obovate leaves with flat, entire margins. The two taxa also display similar dimensions of capitula and similar characteristics of involucre bracts. *Anastraphia crebribracteata* also resembles *A. attenuata* in the presence of numerous bracts in the involucre, which has an attenuated base, but differs from that species in leaf, flower, and capitulum characteristics. This species inhabits pine woods and charrascales in the north of Guantánamo (the Baracoa sector of the Nipe-Sagua-Baracoa massif) and the Moa region of Holguín.

Anastraphia oviedoae morphologically resembles *A. calcicola* in that both have nanophyllous, toothed and spiny leaves. The two differ, however, in the form of the capitulum: campanulate in *A. oviedoae*, turbinate in *A. calcicola*. On the other hand, *A. oviedoae* resembles *A. northropiana* GREENM. to some extent, but the two differ in leaf and capitulum dimensions, the number of series of bristles of the pappus, and the characteristics of the spines of leaf margins, which are shortly acuminate with small irregular spine, mainly at the apex of the leaves in *A. northropiana* and with regular spines along the whole margin of the leaf in *A. oviedoae*. *Anastraphia oviedoae* is found in xeromorphic coastal and subcoastal matorral in southeastern Cuba.

Anastraphia geigeliae resembles *Anastraphia recurva*. The two differ, however, in leaf shape: obovate or oblong with cuneate base in *A. recurva*, elliptic or obovate with rounded base in *A. geigeliae*. Furthermore, leaf margins differ notably between the two species. In *A. geigeliae* the leaf margin is acuminate toothed with up to 13 pairs of teeth, while leaves of *A. recurva* have entire margins or acuminate toothed margins with only up to three pairs of teeth. The species also differ in that up to four capitula of *A. geigeliae* may exist in a glomerule whereas *A. recurva* usually has solitary capitula. The differences between these two taxa were also discussed by JERVIS (1954), who concluded that the two were ecotypes

of a single species because of the notable habitat differences. Nevertheless, the substantial morphological differences between the two taxa merit their separation into different species.

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